<u>In the claims</u>:

Please amend the claims as follows:

B1

Claim 1 (currently amended): A laser system that produces radiation at an operative wavelength, the system defining a laser cavity, and the system comprising:

a mode-locking element configured to mode-lock output of the laser system; and

a semiconductor element <u>positioned within the cavity to provide increasing absorption of radiation</u> ~~that produces nonlinear increasing loss~~ at the operative wavelength <u>as energy density of radiation at a surface of the semiconductor element increases</u> ~~sufficient to enhance stability of the mode-locked output~~.

Claim 2 (original): The laser system of claim 1, wherein the semiconductor element comprises a semiconductor material that has a band-edge greater than the operative wavelength, such that, at the operative wavelength, the material exhibits two-photon absorption, but not one-photon absorption.

Claim 3 (original): The laser system of claim 2, further comprising a reflective structure disposed along an optical path in the cavity, wherein the semiconductor element comprises one or more layers of the material disposed on the reflective structure.

Claim 4 (currently amended): The laser system of claim 1, wherein the semiconductor element comprises a semiconductor material that has a conduction band, and the material, when exposed to radiation having the operative wavelength, generates sufficient carriers in the conduction band to initiate sufficient free carrier absorption from the conduction band to produce the <u>increasing absorption</u> ~~nonlinear increasing loss~~.

Claim 5 (original): The laser system of claim 4, further comprising a reflective structure disposed along an optical path in the cavity, wherein the semiconductor element comprises one or more layers of the material disposed on the reflective structure.

Claim 6 (original): The laser system of claim 1, further comprising a transmissive structure disposed along an optical path in the cavity, the transmissive structure including the semiconductor element.

Claim 7 (original): The laser system of claim 1, wherein the system is tunable to produce radiation over a wavelength range, the wavelength range including the operative wavelength.

Claim 8 (original): The laser system of claim 1, wherein the mode-locking element comprises a saturable absorber that passively mode-locks the laser system.

Claim 9 (original): The laser system of claim 1, wherein the mode-locking element comprises an external function generator driving a modulator that actively mode-locks the laser system.

Claim 10 (currently amended): A laser system that defines a laser cavity, the system comprising:

a pump;

a gain medium that produces radiation at an operative wavelength when pumped by the pump;

a reflector disposed along an optical path in the cavity, the reflector comprising one or more layers of a first semiconductor material that acts as a saturable absorber at the operative wavelength to mode-lock output the laser, and one or more layers of a second semiconductor material positioned within the cavity to provide increasing absorption of radiation ~~that produces nonlinear increasing loss~~ at the operative wavelength as energy density of radiation at a surface of the second semiconductor material increases ~~to stabilize the mode-locked output~~.

Claim 11 (currently amended): The laser system of claim 10, wherein the second semiconductor material produces two-photon absorption to achieve the increasing absorption ~~nonlinear increasing loss~~.

Claim 12 (original): The laser system of claim 11, wherein the reflector is configured such that, when light having the operative wavelength is incident upon the reflector, a resulting electric field within the reflector forms a standing wave within the reflector.

B1 cont'd

Claim 13 (original): The laser system of claim 12, wherein the standing wave has a local maximum at a location of one or more layers of the first semiconductor material.

Claim 14 (original): The laser system of claim 12, wherein the standing wave has a local maximum at a location of one or more layers of the second semiconductor material.

Claim 15 (original): The laser system of claim 11, wherein the second semiconductor material comprises InP.

Claim 16 (original): The laser system of claim 15, wherein the first semiconductor material comprises InGaAs.

Claim 17 (original): The laser system of claim 15, wherein the gain medium comprises an Er/Yb waveguide.

Claim 18 (original): The laser system of claim 10, wherein the reflector further comprises a dielectric backmirror configured to reflect light having the operative wavelength.

Claim 19 (original): The laser system of claim 10, wherein the reflector further comprises a resonant coating or an anti-reflective coating.

Claim 20. (currently amended) A laser system that defines a laser cavity, the system comprising:

a pump;

a gain medium that produces radiation at an operative wavelength when pumped by the pump;

an element that actively mode-locks output of the laser system;

a structure disposed along an optical path in the cavity, the structure comprising a semiconductor material positioned within the cavity to provide increasing absorption of radiation at the operative wavelength as energy density of radiation at a surface of the semiconductor material increases ~~sufficient to enhance the stability of the mode-locked output~~.

B1 contd

Claim 21 (currently amended): The laser system of claim 20, wherein the material produces two-photon absorption to achieve the increasing absorption ~~nonlinear increasing loss~~.

Claim 22 (original): The laser system of claim 21, wherein the structure comprises a reflector, the reflector comprising one or more layers of the material.

Claim 23 (original): The laser system of claim 21, wherein the structure comprises a transmissive substrate that includes the material.

Claim 24 (original): The laser system of claim 23, wherein the structure comprises a waveguide.

Claim 25 (original): The laser system of claim 21, wherein the gain medium comprises erbium doped fiber, and the semiconductor material comprises InP.

Claim 26 (currently amended): A method of enhancing the stability of a continuous wave mode-locked output of a laser, the laser defining a cavity and the laser producing radiation at an operative wavelength, the method comprising:

passively mode-locking the output of the laser to produce a continuous train of pulses; and

stabilizing the continuous train of pulses against intensity fluctuations by incorporating into the cavity a semiconductor element positioned within the cavity to provide increasing

absorption of radiation ~~that produces a nonlinear increasing loss~~ at the operative wavelength as energy density of radiation at a surface of the semiconductor element increases.

Claim 27 (original): The method of claim 26, wherein the stabilizing step includes stabilizing the continuous train of pulses against Q-switched mode-locking.

Claim 28 (original): The method of claim 26, wherein the mode-locking step includes mode-locking by incorporating a saturable absorber into the cavity.

B1 contd

Claim 29 (currently amended): The method of claim 26, wherein the semiconductor element comprises a semiconductor material that exhibits two-photon absorption, but not one-photon absorption, at the operative wavelength to achieve the increasing absorption ~~nonlinear increasing loss~~.

Claim 30 (original): The method of claim 29, wherein the stabilizing step includes incorporating a mirror into the cavity, the mirror having one or more layers that comprise the material.

Claim 31 (currently amended): The method of claim 26, wherein the semiconductor element comprises a semiconductor material that exhibits sufficient free carrier absorption at the operative wavelength to achieve the increasing absorption ~~nonlinear increasing loss~~.

Claim 32 (currently amended): A method of suppressing supermodes in the output of an actively mode-locked laser, the laser defining a cavity and the laser producing radiation at an operative wavelength, the method comprising:

actively mode-locking the laser to produce a continuous train of pulses; and

incorporating a semiconductor element into the cavity, the semiconductor element positioned within the cavity to provide increasing absorption of radiation ~~producing a nonlinear increasing loss~~ at the operative wavelength as energy density of radiation at a surface of the

<u>semiconductor element increases,</u> to limit peak intensity of the pulses, and thereby suppress supermodes.

B1 cont'd

Claim 33 (currently amended): The method of claim 32, wherein the semiconductor element comprises a semiconductor material that exhibits two-photon absorption, but not one-photon absorption, at the operative wavelength, to produce the <u>increasing absorption</u> ~~nonlinear increasing loss~~.

Claim 34 (original): The method of claim 33, wherein the incorporating step includes incorporating a mirror into the cavity, the mirror including one or more layers of the material.

Claim 35 (original): The method of claim 33, wherein the incorporating step includes incorporating a waveguide into the cavity, the waveguide being partly formed from the material.